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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,702	03/10/2004	Kenji Miyata	056205.49851RE	4708
23911	7590	01/20/2006	EXAMINER	
CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			PATIDAR, JAY M	
			ART UNIT	PAPER NUMBER
			2862	

DATE MAILED: 01/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,702

Applicant(s)

MIYATA ET AL.

Examiner

Jay M. Patidar

Art Unit

2862

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 25-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/10/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

1. Restriction to one of the following inventions is required under 35 U.S.C.

121:

- I. Claims 1-18,20, drawn to an apparatus with plates sandwiching the magnet, classified in class 324, subclass 207.2.
- II. Claim 19, drawn to an apparatus with a yoke, a magnetic substance cover, a housing cover, a dedicated cover and the cover preventing external magnetic field, classified in class 324, subclass 207.25.
- III. Claims 25-26, drawn to an apparatus with a magnetic path members with a slit and no magnetic plates sandwiching the magnet required, classified in class 324, subclass 207.25.
- IV. Claim 27, drawn to an apparatus with a magnetic path member, a magnetic flux converging means and a magnetic member for shielding purpose, classified in class 324, subclass 207.12.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I-IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, inventions

have separate utility such as by itself for its intended purpose or different inventive features.

3. Because these inventions are distinct for the reasons given above and the search required for one group is not required for other group, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their divergent subject matter, restriction for examination purposes as indicated is proper.

5. Claims 19,25-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

6. The following is an action on merit for the original patent claims invention.

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

8. Please note that the original patent has not been surrendered or the application does not contain a statement that the original patent is lost or misplaced.

9. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 205,207. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

10. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the subject matter of claim 18 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed

invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

11. Claims are objected to because of the following informalities:

In claim 1, line 14, there is no antecedent basis for “said permanent magnetic”. It is suggested that the wording “said permanent magnet” be

adopted. The structure as set forth in the last paragraph is not clear; it is unclear as to what is the difference between protruded magnetic portion and protruded portions; "instead of" at line 19 is not positively defined; the structure as claimed in the middle of the claim is different from the structure as claimed in the last paragraph;

In claims 2,3,24, how a magnet is fixed to a rotating axis; the phrase "a pair of small air gaps air gap;" does not make sense; it is vague as to how such air gaps are formed; the phrases "split air gaps", "imaginary plane" and "axial center line" are not clearly defined (claim 2); the overall structure as claimed is unclear and thus the scope of the claim; the phrase (claim 3) "wherein said pair of small air gaps ... therebetween" is unclear; how such air gaps are formed and how symmetrical positions are defined;

Claim 4 recites the limitation "said magnetic plate assemblies" in line 3. There is insufficient antecedent basis for this limitation in the claim.

In claim 5, the structure of "magnetic forming members" and "magnetic converging portion" is vague; it is not clearly understood as to how these elements cooperate with each other; how converging portions are formed in a magnetic path; what is a "particular position"?

In claim 6, it is unclear as to what constitutes a magnetic substance arranged between the motor and the magnetic paths and its function/purpose;

In claim 9 is objected to because of the following informalities: On line 14, there is no antecedent basis for "said permanent magnetic". It is suggested that the wording "said permanent magnet" be adopted.

Claim 14 is objected to because of the following informalities: the phrase "formed by narrowing part of each of said magnetic plates" is unclear. It is not clear to which embodiment or figure this section refers nor how the plate is narrowed. Claim 14 has been examined with this phrase removed from the claim. Appropriate correction is required.

In claim 16, it is unclear as to what is the magnetic material;

In claim 15, the phrase "when looking...rotating direction" is not clearly understood; the structure of the magnet as claim is vague;

In claim 18, it is vague as to what is a member and how it is used to fix the plate; where to fix such plate; and how it cooperates with rest of the elements;

In claim 20, there is no antecedent basis for "magnetic flux concentrating portion";

In claim 21, it is unclear as to how a pair of air gaps being formed in the magnetic substance assemblies; the structure as claimed is vague;

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 13, the term "preferably" is indefinite since the metes and bounds of the claim are not clearly set forth.

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4,9, 11,14,17,21-22,24 are rejected under 35 U.S.C. 102(b) as being anticipated by Foggia et al. (EP 0798541).

As to claims 1,2 (insofar as understood), 9,21-22,24, Foggia discloses a non-contact rotational position sensor (angular position transducer, col. 2, line 14) comprising: a permanent magnet having a circular or arc-shaped outer

circumference (rotor magnet is axially magnetized, col. 2, line 39 and Fig. 4, Item 9): a shaft for supporting and fixing said permanent magnet (external body, col. 4, line 8): upper and lower magnetic plates sandwiching said permanent magnet from above and below (pole pieces 4 and 5, col. 5, lines 14-21 and fig. 4), at least one of the upper and lower magnetic plates being horizontally separated from the other with an air gap formed between them (part 4a and 4b are two half non-jointed rings, col. 5, lines 17-18 and fig. 4); at least one protruded magnetic substance portion disposed between the upper and lower magnetic plates (external outgrowths, Col. 5, Lines 29-30): and a magnetic sensitive device disposed on a protruded surface of the protruded magnetic substance portion e.g. 4a1,4b1 (magnetic sensors not shown in fig. 4 (col. 5, lines 28-33) but reference is made to those shown in fig. 1, Items 12-13 in air gaps 7 and 8). The permanent magnet and the shaft constitute a rotor, which rotates relative to the vertically spaced magnetic plates (the armature rotates, col. 5, lines 34-37) and the permanent magnet is magnetized in the direction of the rotation axis (axial magnetic direction, col. 5, lines 37-38 and fig. 4, arrow 10). The amount of magnetic flux detected by the sensor varies with the rotation of the magnet (linear detection of position over 180 degrees, col.6, lines 26-33).

As to claims 3-4 (insofar as understood), the air gaps can be symmetrical with respect to the rotating axis (fig. 5).

As to Claim 11, the permanent magnet of Foggia is in the form of an arc in e.g. fig. 4.

As to claim 14, Foggia discloses the invention. In particular, the magnetic plates sandwiching the magnet from opposite outer sides in the radial direction are shown in Fig. 4 as pole pieces 4 and 5, and described in col. 5, lines 14-21. The portions, air gaps between the portions and sensors disposed in the air gaps are disclosed by Foggia (external outgrowths, air gaps and sensors, col. 5, lines 28-33 and fig. 4, Items 4a1 and 4b1, 7 and 8).

As to claim 17, Foggia discloses a Hall device (col. 4, line 12).

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-8 ,23are rejected under 35 U.S.C. 103(a) as being unpatentable over Foggia.

As to claims 5-7, Foggia discloses a rotational position sensor as explained above in detail except for the use in a throttle valve assembly. The use

of such rotational sensor is considered an intended use of the operation. Such sensor can be housed in any housing with a resin cover or an auxiliary cover which is known in the related art.

As to claim 8, the structure as set forth in claim 8 is shown in fig. 4 of Foggia.

As to claim 23, the shape of the magnetic plates is considered an obvious variance over the prior art.

15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foggia et al. in view of Willett (4789826).

As to claim 10, Foggia et al. disclose the features of the invention as explained above with respect to claim 9, but do not teach a permanent magnet in the form of a ring. The use of the ring magnet is known in the magnetic field art for its function (e.g. see 5,444,369). Willett discloses a non-contact rotational position sensor (angular position sensing transducer, col. 1, line 8) which uses a permanent magnet in the form of a ring (ring magnet, col. 2 lines 48-52 and fig. 10, Item 16) as the magnetic element to improve the linearity of the output field (col. 2, lines 56-60). It would be obvious to one skilled in the art at the time of the invention to use the ring shaped magnet of Willett in the magnetic sensor assembly of Foggia et al. to improve the linearity of the output field.

16. Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foggia et al. in view of Togo et al. (5659246).

As to claim 12, Foggia discloses the features of the invention as explained above, but does not teach a permanent magnet in the form of a disk. The use of any shaped magnet as long as it is magnetized in an axial direction would be within the level of ordinary skill in the art and known in the magnetic field art. Togo teaches a non-contact rotational position sensor (magnetic sensor assembly, col. 5, line 5) which uses a permanent magnet in the form of a disk (disc-shaped permanent magnet, col. 11, line 7 and fig. 1, Item 44) to generate the magnetic flux. It would be obvious to one skilled in the art at the time of the invention to use a disc-shaped magnet of Togo in the magnetic sensor assembly of Foggia as a method of generating the magnetic flux needed.

As to claim 18, Foggia does not teach a member for fixing one of the magnetic plates into a one-piece unit by resin-molding. Togo discloses a non-contact rotational position sensor (magnetic sensor assembly, col. 5, line 5) which has a resin molding member surrounding the sensor assembly and defining a housing (resin molding member surrounds the sensor assembly, col. 11, lines 29-33). Togo also teaches that this method provides for a magnetic sensor assembly which has high accuracy (col. 5, line 3). It would have been obvious to one skilled in the art at the time of the invention to use the resin-

molding technique of Togo to form a housing for the split upper plate of Foggia to provide for a sturdy sensor assembly with greater accuracy.

17. Claims 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foggia et al. in view of Pecheny et al. (6201388).

As to claim 13, Foggia disclose the features of the invention as explained above except the gaps between the magnet and upper and lower plates being not less than .5 mm, preferably 1mm. Pecheny discloses a non-contact rotational position sensor (angular position sensor, col. 1, lines 61-62) where the air gap (fig. 1, Item 16) between the magnet (fig. 1, Item 11) and one plate (fig. 1, Item 19) is .635 mm and the air gap (fig. 1, Item 17) between the magnet and the other plate (fig. 1, Item 22) is .787 mm, which are both greater than .5mm.

Pecheny further teaches that this dimensional configuration improves linearity of the output signal (col. 1, lines 31-38).). It would have been obvious to one skilled in the art at the time of the invention to use the dimensional configuration of Pecheny determine the dimensions of the air gaps of Foggia to improve the linearity of the output signal. It is also known in the magnetic field art to keep such gap minimum to accurately focus the magnetic field lines and to enhance the sensitivity of the sensing device.

As to claim 16, Foggia et al. disclose the invention except for the density of the magnetic flux. Pecheny shows a non-contact rotational position sensor (angular position sensor, col. 1, lines 61-62) which specifies a permanent magnetic ring (col. 5, lines 56-63) of a particular type (Alnico-8 magnets). For the magnets shown, none has a strength at the magnet surface greater than 1650 Gauss or .165 T. It would be obvious to one skilled in the art at the time of the invention to use the magnet of Pecheny as the magnetic material of Foggia to produce a sensor of high accuracy and since the material is known in the art.

18. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foggia et al. in view of Hamaoka et al. (EP1065473A2).

As to claim 15 (insofar as understood), Foggia does not teach a permanent magnet magnetized into at least a double pole magnet when looking at the outer circumference. Hamaoka discloses a non-contact rotational position sensor (angular position detecting apparatus, p. 2, para. 0001) which uses a ring magnet polarized so that half the magnet will show a south pole at the circumference and the other half will show a north pole at the circumference (permanent magnet, p. 3, para. 0011, Lines 27-34 and Fig. 5, Item 27). This double pole magnets are known in the art to complete the magnetic circuit. It is considered an obvious design consideration.

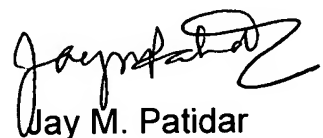
As to claim 20, Foggia discloses the features of the invention except holes in one of the magnetic plates near the protruded portion. Hamaoka teaches in a no-contact rotational position sensor, circular holes formed in a plate near the sensor portion (circular depressions, p. 3, para. 0013 and fig. 3, Item 38) for the purpose of concentrating the flux through the sensor thus increasing the sensor output (p. 3-4, para. 16). It would have been obvious to one skilled in the art at the time of the invention to use the flux concentrating holes of Hamaoka on the plates of Foggia to increase the output of the sensor.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. 6043645, 5164668 and 5789917 as disclosing rotational position sensors. 5544000 as disclosing a housing of resin molding.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay M. Patidar. The examiner can normally be reached on M-F, 8:30-6:45.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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AU 2862
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